

SOCIOCULTURAL AND OTHER FACTORS ASSOCIATED WITH MALNOURISHED CHILDREN AGED UNDER-FIVE IN PREAH VIHEAR PROVINCE, CAMBODIA

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ABSTRACT: Malnutrition affects physical, mental and intellectual development as well as the morbidity, mortality and physical work ability and the continued consequences impact on human performance and survival. It is underlying causes resulted in many diseases and death for the children under-five years of age. Factors are contributing to the malnourished children are considered to many and varied. The objective of the study was to identify the sociocultural and other factors associated with underweight children age under-five in Preah Vihear province. Factors considered socio-demographic characteristics, food relating factors, environment factors, household economic and health status of mother and child. It was a cross sectional study using a modified questionnaire from MICS 2006 and measure of weight and height. Two hundred twenty households with children under-five from 3 sub-district of Chhaeb, Preah Vihear participated. The statistical package for the social sciences (SPSS) 16 version was used for data analysis of frequency, percentage, mean, standard deviation and cross tabulation tested by chi-square. And Anthropometric Measurement of World Health Organization (WHO) was used weight for age, weight for height and height for age for analyzing the nutritional status of children. The result showed the prevalence of underweight, stunting and wasting children under-five years of age; 77.3%, 60.9% and 61.4%. Most of the respondents were farmers (95.3%) and no education (33.6%) and completed primary school (63.7%). From the statistical analysis using Chi-square; factors associate with underweight children were level of mother's education, number of times feeding/breastfeeding, feeding child extra snacks, children ate carbohydrate, protein food, vegetables/fruits, sweets ($p < 0.05$). Moreover, the finding revealed that the environment factors (child drinking water treatment) and child health factors (child fever with cough) showed statistical significant with underweight children ($p < 0.05$). Conclusion, in term of food culture, beliefs and prejudice there were no statistical significant different. However, over half the mothers/closed-caregivers thought that child ate fish caused parasite and first breast milk caused child diarrhea or sickness due to their food beliefs. For improving the child nutritional status, health and nutrition and safe drinking water should be provided to the mothers.

Keywords: Malnourished children, Underweight, Stunting, Cambodia

INTRODUCTION

The sociocultural factors influence health and reproductive health, particularly human development due to the individual access to assets, opportunities and the quality of social relationship that are embedded in cultures. In order to reduce health inequalities need to address the wider

socioeconomic and structural factors. Based on the fundamentals of health care reform, economic and social factors are 55 percent influents on health status of the human being. Globally, 20 million of children aged under-five were suffered from severe acute malnutrition caused to be serious illness and early death in 2010 [1]. In 2011, 165 million children were estimated to be stunted, 101 million were underweight and 52 million were wasted [2]. The Millennium Development Goal attempts to

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eradicate by two thirds of children under-five death rate between 1990 and 2015. And A World Fit for Children goal also aims to the reduction of malnutrition and death of children aged under-five by at least one third and continuously effort to decrease by two thirds in 2015. The majority of child mortality before five years of age in low-income country was 18 times higher than in high income country. In addition, in Asia, the death of under-five dropped almost half from 82 to 42 deaths per 1,000 live births between 1990 and 201. Therefore, the malnutrition was accounted for 3.1 million of children death, 52 million of child wasting and 100 million of child underweight among under five in 2011 [3].

Moreover, Cambodia is one of the South-East countries that set the Millennium Development Goal (MDG4) to the reduction rate of children mortality under five by two third from 1990 to 2015. However, the malnutrition still attributed more than 6,400 children deaths each year. The sociocultural aspects associated with malnourished children owing to the traditional and belief of weaning diets and separated child from mother while she went to work during breastfeeding period, which predisposed to be malnourished. Basically, the malnutrition caused from various factors such as poverty, inadequate utilization and wrong type of food, poor practice and knowledge of nutrition, child diarrhea, acute respiratory infection and micronutrients deficiencies.

Preah Vihear province where is one of the highest prevalence of children under-five death and malnutrition in Cambodia. In 2010, the children deaths were 118 per 1,000 live births and 56 percent of stunting, 8 percent of wasting and 37 percent of underweight [4].

MATERIALS AND METHODS

A descriptive cross-sectional study was identified the association between sociocultural and other factors and underweight of under-five children. And the questionnaires comprise four aspects: socio demographic characterization, environment factors, food relating factors, household economic status, and health status of mother/child. Additionally, the study purposively conducted in 3 selected sub-districts; *Chhaeb Pir*, *Sangkae Pir*, *Mlu Prey Pir*, where have 9 villages. Therefore, *Chhaeb* district comprises of 8 sub-districts with the majority of *Khmer* people and ethnic groups; *Phnorng*, *Kuy*, *Kreung* and *Jarai*. As the result, the list of households with under-five children was selected by simple random sampling. Totally 220 households with children under-five

Table 1 Prevalence of malnourished children age under-five

| Statement | Frequency | Percentage |
|---|-----------|------------|
| Nutritional status (underweight n=220) | | |
| Normal | 50 | 22.7 |
| Underweight | 170 | 77.3 |
| - Moderate | 74 | 33.6 |
| - Severe | 96 | 43.7 |
| Nutritional status (stunting n=220) | | |
| Normal | 86 | 39.1 |
| Stunting | 134 | 60.9 |
| - Moderate | 74 | 33.6 |
| - Severe | 60 | 27.3 |
| Nutritional status (wasting n=220) | | |
| Normal | 85 | 38.6 |
| Wasting | 135 | 61.4 |
| - Moderate | 80 | 36.4 |
| - Severe | 55 | 25.0 |

years of age participated in the study. Research ethical approval was taken from Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University, Thailand.

Furthermore, the research questionnaire was modified from MICS Thailand 2006 and CDHS 2010. And the interview with mother/caregivers and measure of the children, the consent form was sent to the village leaders and health volunteers of each selected village. The validity of questionnaires was distributed to 3 public health experts and translated into *Khmer* languages. Vitality, the statistical package for the social sciences (SPSS) 16 version was used for data analysis of frequency, percentage, mean, standard deviation and cross tabulation tested by chi-square test. And Anthropometric Measurement of World Health Organization (WHO) was used weight for age, weight for height and height for age for analyzing the nutritional status of children.

RESULTS

The Table 1 indicated the prevalence of malnourished children age under-five was (77.3%) of underweight; 33.6% moderate, 43.7 severe and (60.9%) of stunting; 33.6% moderate, 27.3% severe and (61.4%) of wasting; 36.4% moderate, 25.0% severe.

The finding in Table 2 revealed 33.6% of the mother/closed-caregiver had no education and their major occupations, 95.3% were farmers. And 70.5% of the household had only one living child during the survey. Therefore, the respondents' religion, 99.1% are Buddhist and a very few (0.9%) are Christian with *Khmer's* nationality (86.8%) and 13.2% are *Kuy* ethnic minority.

Table 2 Socio demographic characterization of mothers/closed-caregivers

| Socio demographic characterization | Number (n) | Percentage |
|---|------------|------------|
| Education (n=220) | | |
| No schooling | 74 | 33.6 |
| Primary school | 140 | 63.7 |
| Secondary school | 6 | 2.70 |
| Mother's occupation (n=220) | | |
| Farmer | 210 | 95.3 |
| Housewife | 7 | 3.20 |
| Government service/employee | 1 | 0.50 |
| Own account | 1 | 0.50 |
| Unskilled labor | 1 | 0.50 |
| Total under-five children of the household (n=220) | | |
| 1 | 156 | 70.9 |
| 2 | 53 | 24.1 |
| >3 | 11 | 5.00 |
| Mother's religion (n=220) | | |
| Buddhist | 218 | 99.1 |
| Christian | 2 | 0.9 |
| Mother's ethnicity (n=220) | | |
| Khmer | 191 | 86.8 |
| Kuy | 29 | 13.2 |

Table 3 Food prejudice and beliefs of the mother/closed-caregiver

| Statement | Frequency (Percentage) | | |
|--|------------------------|-----------|------------|
| | Yes | No | Don't know |
| Believed first breast milk caused child diarrhea or sickness | 93(42.3) | 101(45.9) | 26(11.8) |
| Believed feeding only rice with sauce caused child good growth | 63(28.6) | 97(44.1) | 60(27.3) |
| Had ever feeding child the complementary food (high nutrient food) | 64(29.1) | 151(68.6) | 5(2.3) |

Table 4 Food culture and beliefs

| Statement | Frequency (Percentage) | | |
|---|------------------------|-----------|------------|
| | Yes | No | Don't know |
| Belief eating fish caused parasite | 121(55.0) | 49(22.3) | 50(22.7) |
| Belief eating eggs caused diarrhea | 52(23.6) | 110(50.0) | 58(26.4) |
| Belief feeding child the complementary food caused diarrhea | 57(25.9) | 92(41.8) | 71(32.3) |
| Belief eating shell/crabs caused parasite | 32(14.5) | 77(35.0) | 111(50.5) |
| Belief ripen mango and vegetable caused diarrhea | 77(35.0) | 97(44.1) | 46(20.9) |

As the findings in Table 3 revealed the food prejudice and beliefs, 42.3% of the mothers/closed-caregivers believed first breast milk caused child diarrhea or sickness meanwhile 45.9% of the respondents did not. Moreover, the belief of feeding child only rice with sauce to good growth, 28.6% of the respondents thought while 44.1% of the respondents had no that belief. Mainly, 29.1% of the mothers/closed-caregivers had ever fed complementary food to their children while 68.6% of the respondents had never fed their children.

Therefore the findings in Table 4 showed the belief of mothers/closed-caregivers as followed; The findings 55.0% of the respondents believed the children ate fish caused parasite, 35.0% believed child ate mango/vegetables caused diarrhea, 25.9% believed feeding the complementary food caused

child diarrhea, 23.6% believed child ate egg caused diarrhea and lastly, 14.5% believed child ate crabs caused parasite.

The findings in Table 5 showed the underweight children were found significantly association between the underweight level and the factors as followed; The mothers/closed-caregivers completed primary and secondary school was in underweight higher than the mother's had no schooling, ($p < 0.05$), the value showed a significant association between the mother's education and the underweight. And the children feeding/breastfeeding below 3 times was the highest in underweight, ($p < 0.05$), the values showed a significant association between the number of times feeding/breastfeeding and the underweight. Furthermore, the children received feeding extra

Table 5 Association factors with the underweight children

| Characteristics | Underweight children | | Total | X ² | P-value |
|---|----------------------|--------------------------------------|----------|----------------|---------|
| | Normal | Underweight (moderate/ severe) | | | |
| | n(%) | n(%) | | | |
| Mother's education | | | | | |
| No schooling | 23(31.1) | 51(68.9) | 74(100) | 4.431 | 0.035 |
| Primary school and secondary school | 27(18.5) | 119(81.5) | 146(100) | | |
| Number of time feeding/breastfeeding child a day | | | | | |
| <3 times | 1(9.1) | 10(90.9) | 11(100) | 27.449 | .000 |
| 3-6 times | 37(19.2) | 156(80.8) | 193(100) | | |
| >6 times | 12(75.0) | 4(25.0) | 16(100) | | |
| Giving child extra snacks during the day | | | | | |
| Yes | 23(17.7) | 107(82.3) | 130(100) | 4.587 | 0.032 |
| No | 27(30.0) | 63(70.0) | 90(100) | | |
| Food group (carbohydrate) | | | | | |
| Eating | 38(18.9) | 163(81.1) | 201(100) | 19.357 | .000 |
| Don't eat | 12(63.2) | 7(36.8) | 19(100) | | |
| Food group (protein) | | | | | |
| Eating | 34(18.2) | 153(81.8) | 187(100) | 14.667 | .000 |
| Don't eat | 16(48.5) | 17(51.5) | 33(100) | | |
| Food group (sweets) | | | | | |
| Eating | 31(17.1) | 150(82.9) | 181(100) | 18.234 | .000 |
| Don't eat | 19(48.7) | 20(51.3) | 39(100) | | |
| Food group (vegetal/fruit) | | | | | |
| Eating | 30(18.2) | 135(81.8) | 165(100) | 7.765 | 0.05 |
| Don't eat | 20(36.4) | 35(63.6) | 55(100) | | |
| Child drinking water treatment | | | | | |
| Boiled water | 24(32.4) | 50(67.6) | 74(100) | 6.640 | 0.036 |
| Unboiled water | 24(18.9) | 103(81.1) | 127(100) | | |
| Filtered water | 2(10.5) | 17(89.5) | 19(100) | | |
| Child fever with cough during last 2 weeks | | | | | |
| Yes | 39(20.4) | 152(79.6) | 191(100) | 4.397 | 0.036 |
| No | 11(37.9) | 18(62.1) | 29(100) | | |

snacks during the day were in underweight higher than the children did not feed the extra snacks, ($p < 0.05$), the values showed a significant association between the children received extra snacks feeding and the underweight.

Basically, the children ate carbohydrate, protein, sweets food group was in underweight higher than the children did not eat, ($p < 0.05$), the values showed a significant association with the underweight. Therefore, the children ate vegetables/fruits was in underweight, ($p = 0.05$) and the values showed the association with the underweight.

Regarding to the children drinking filtered water treatment was higher in underweight than child drinking boiled and unboiled water, ($p < 0.05$), the values showed a significant association with the underweight. Similarly, the children had fever with cough was the highest in underweight, ($p < 0.05$), the values showed a significant association with the underweight.

DISCUSSION

Malnutrition affects physical, mental and intellectual development as well as the morbidity, mortality and physical work ability and the continued consequences impact on human performance and survival. It is underlying causes resulted in many diseases for the children under-five years of age.

Therefore this study implicated the child nutritional status prevalence of under-five children, (77.3%) of underweight, (60.9%) of stunting and (61.4%) of wasting that was higher than Cambodia demographic health survey [4], due to this survey conducted in the community where the most of mothers were (13.2%) of Kuy ethnic minority, (56.8%) of the household income below 350USD in a year and (63.7%) of the mothers in lower education. Similarly, compares to another studied in Vietnam among the ethnic minorities, the prevalence of malnourished children aged under-five, (29.3%) of underweight, (28.3%) of stunting

and (10.0%) of wasting [5].

The study replicated that the majority of mother's age (47.2%) between 25-34 years and followed by (35.9%) aged 15-24 years, but in this study could not find out the association between mother's age and underweight. In addition, the educational level obviously (63.7%) of the mothers completed only primary school and (95.3%) of the mother/closed-caregivers' occupation are farmers.

The findings indicated the mother's education, (63.7%) of the mothers studied only primary school, and this educational level was significantly associated with the underweight children aged under-five ($p < 0.05$). And the finding was analogous to the studied of the factors affecting prevalence of malnutrition among children under three-years of age in Botswana; found that the prevalence of underweight decreased significantly ($p < 0.01$) when the level of the mother's education increased [6].

In this study, the findings revealed the children feeding/breastfeeding below 3 times a day, it was significantly associated with the underweight children aged under-five, ($p < 0.05$). Similar report from Cambodia demographic health survey in 2010, [4] the children need more frequency of times feeding with the appropriate quantity and quality due to the transition period (ages 6-23 months), the prevalence of malnutrition increased substantially because the increased infection and the poor feeding practices. Vitaly, UNICEF and WHO [7] recommends the introduction of solid food to infants at appropriately the age of 6 months due to the breast milk alone is not sufficient to pertain the child's optimal growth. Further the complementary feeding should be safe, appropriate and adequate foods as well as the frequency of complementary feeding, 2 times per day for children 6-8 months and 3 times per day for children 9-11 months. Therefore another breastfeeding should be "on demand", as often as the child wants day and night and the bottles feeding should be avoided.

The findings revealed that the children received feeding extra snacks during the day were in underweight, the values was significantly associated with the underweight children ($p < 0.05$). Similarly, Cambodia national health survey in 2010 [4] reported that underweight children began to increase at the age when normal complementary feeding starts due to the inappropriate or inadequate feeding practices. Therefore the evident resulted (59.5%) of the children consumed cakes and (36.8%) of candies during the day and night. In contrast (30.8%) of the children received the

complementary feeding with nutritional adequate, appropriate and safe food at six months to complement breastfeeding. This was due to the mothers/caregivers misunderstood that the extra snack feeding was appropriate for their children growth. Also, fed frequently not enough according to infant and young child feeding recommendations and not fed a sufficient variety of foods.

The findings revealed that the children ate carbohydrate, protein, sweets food was in underweight ($p < 0.05$), showed a significant association with the underweight children. Thereby the children ate vegetable/fruit group was in underweight ($p = 0.05$). That was because of the food culture and beliefs of the mothers fed the children only separately food rather than the combined food groups. And the solid foods, such as mashed fruits and vegetables, should be introduced to complement breastfeeding for up to two years or more. Due to the traditional cultural food practices, cassava, mango, beans squash are sparingly consumed by the children. The study by Peter & Ebenezer [8] found that cultural food habits and infant feeding practices were identified as major causes of childhood malnutrition. The cultural food habits and children feeding food practice were identified as major causes of childhood malnutrition. For example, from the culture point of view, among some major ethnic groups and Khmer people, the concept of healthy child was taking to meaning 'fat baby'.

In this study, in term of food prejudice and beliefs of the mother/closed-caregiver was not significant association with the level of underweight children ($p > 0.05$). In contrast, the studied by Innocent Onyesom [9] "effect of cultural beliefs and forbidden foods on the ABCD parameters of nutrition among some children in Nigeria". It also found that food prejudice and prohibition was strong factors accountable for under nutrition of children in the rural communities. The studied also revealed that cultural attitudes of parents toward certain foods may contribute to children's under nutrition prior to the food prejudice and beliefs.

The findings revealed that child drinking water treatment were significantly associated in underweight ($p < 0.05$). And the studied by Senbanjo [10] on the influence of socio-economic factors on nutritional status of children in rural community of Nigeria, found that there was no association between the source of drinking water and malnutrition ($p = 0.568$). Therefore, the way treating water at home to make it safer to drink includes boiling and using a water filter were

considered proper methods treatments for drinking water. The studied in Nigeria by Olabisi [11], on using anthropometric measures to analyze how sources of water and sanitation affect children health in Nigeria, found that the increasing access to safe drinking water for households will be highly reduced the high incidence of underweight among the children in Nigeria.

The finding revealed the children had fever with cough was in underweight higher than the child had no fever with cough ($p < 0.05$), the values was significantly associated with the underweight children under-five years of age. Fever is a primary manifestation of acute infections in children. Fever can contribute to high levels of malnutrition and mortality from the national health survey report in 2010. The prevalence of fever varied by the age of the child, children age 6-11 months and 12-23 months were more commonly sick with fever. In addition to that the mothers/caretakers are recommended to bring their children to the health facility for treatment as soon as possible. Fever can attribute to the malnutrition; especially the underweight children may loss body fluid, so then treating by giving more fluid to drink, giving the complementary food if the children are beyond 6 months olds. Therefore if the children aged 0-6 months under the exclusive breastfeeding, the mothers/caretakers provide more frequently breastfeeding time during the day and in addition to the treatment. Another report from Cambodia anthropometric survey in 2008, found that the prevalence of children diarrhea, fever, ARI has not been improved over the decade (2000 to 2010), due to the lowest wealth quintiles and either sanitation or longer-term of under nutrition of the household food and livelihood crisis and the exposure to repeated infection as the malnutrition conceptual frame work of UNICEF 1991.

Limitation of study, the malnourish of under-five children can be influenced by many factors such socio economic, food insecurity, education, social care and environment and diseases. In this current study sampled in Chhaeb district, Preah Vihear, and therefore, the influence of sociocultural and other factors was expected to the findings and cannot include all the relevant factors. Therefore, other complications of the study design would lead the systemic errors and challenge the findings of under-five underweight.

CONCLUSION

From the findings can be summarized that, the prevalence of malnourished children under-five years of age, in Preah Vihear province, Cambodia

was very high compares to the national health survey 2010 (77.3% in this study and 28.3% from national survey). Though the significant findings revealed the mother's education, number of times feeding/breastfeeding, feeding child extra snacks, food culture and beliefs, children drinking filtered water and ill children. Due to the traditional culture and major ethnic groups most of the mothers discarded first breast milk, inadequate duration of breastfeeding, feeding children snacks with sweets food and bottles feeding rather than the complementary food with high nutrients, drinking un-boiled water treatment rather than the boiling. Mainly, the children illness of fever and cough are resulted from the lack of health care, feeding practices and seeking treatment. Therefor the children are more exposed to the repeated infection and disease. Additionally, the belief of children ate fish, crabs, and fruits caused to parasite and diarrhea, as the result the children consumed less protein, vitamin and micronutrients during the day and night. For improving the child nutritional status, health and nutrition and safe drinking water should be provided to the mothers and wider communities.

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